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NOTES AND COMMENT

NOTE ON SPECIFIC ACIDITY

The relative merits of an exponential method of statement of acidity beginning at a theoretical normality point, and of a direct method beginning at neutrality, have been discussed by several writers (see 'literature'), and it is not intended to continue the controversy here. Many scientists will always prefer the one because of its theoretical significance, while some will favor the other because of its greater ease of comprehension. Specific acidity, the term used in the direct method, is the amount of active acid (*i.e.,* hydrogen-ion) present in a liter of a given solution, expressed in terms of the approximate hydrogen-ion concentration of pure water (0.000,000,1 gram per liter) as a unit; specific alkalinity is the corresponding amount in terms of hydroxyl-ion.

One of the objections which has been raised to the use of the conceptions of specific acidity and specific alkalinity is that the continuity in the acid-base system of equilibria is thereby lost sight of. (Clark, Atkins). It is here desired to point out that this continuity can be preserved without resorting to a logarithmic form of statement, merely by replacing specific alkalinities by their reciprocals, which are the corresponding specific acidities. The recent attempt of Adamson to preserve the continuity by considering specific alkalinities equivalent to negative specific acidities represents a misunderstanding of the significance of the terms.

TABLE I. *$P_{\bar{H}}$—Specific acidity equivalents*

Ph	Specific Acidity	Ph	Specific Acidity	Specific Alkalinity
4.0	1,000	7.0	1.0	1
.1	800	.1	0.8	1.25
.2	630	.2	0.63	1.6
.3	500	.3	0.5	2
.4	400	.4	0.4	2.5
.5	315	.5	0.32	3.15
.6	250	.6	0.25	4
.7	200	.7	0.2	5
.8	160	.8	0.16	6.3
.9	125	.9	0.13	8
5.0	100	8.0	0.10	10
.1	80	.1	0.08	12.5
.2	63	.2	0.063	16
.3	50	.3	0.05	20
.4	40	.4	0.04	25
.5	31.5	.5	0.032	31.5
.6	25	.6	0.025	40
.7	20	.7	0.02	50
.8	16	.8	0.016	63
.9	12.5	.9	0.013	80
6.0	10	9.0	0.010	100
.1	8	.1	0.008	125
.2	6.3	.2	0.0063	160
.3	5	.3	0.005	200
.4	4	.4	0.004	250
.5	3.15	.5	0.0032	315
.6	2.5	.6	0.0025	400
.7	2	.7	0.002	500
.8	1.6	.8	0.0016	630
.9	1.25	.9	0.0013	800
7.0	1	10.0	0.0010	1,000

For translating P_H values which appear in the literature into specific values, so that the relative magnitudes represented can be grasped, the writer keeps at hand a table, which seems likely to be of sufficient interest to others to justify its publication here. In the portion of the table where P_H is greater than 7 (alkaline reactions) those desiring continuity may use the values in the specific acidity column; while those who prefer to think of such solutions as alkaline may use the values in the one so headed.

LITERATURE

(Dealing with the desirability of statements of reaction starting at the neutral point.)
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EXTREMELY DIVERSIFIED HABITAT OF A MARINE GASTROPOD

While on the University of California Alaska Expedition in 1907 Mrs. Kate Stephens of the San Diego Society of Natural History made a collection of *Buccinum glaciale* Linnaeus in Glacier Bay. This body of water is greatly freshened through the discharge into it of large quantities of glacial ice. For the same reason the waters are chilled almost to the freezing point. The mollusks were found where there was no sea weed, and the bottom was of soft mud with the exception of the small rock upon which they were living.

Shortly afterwards the same species was found living in Bear Bay, Peril Strait. The ocean water here is relatively warm and received directly from the Japanese current. Sea weeds were growing luxuriantly.

Many marine mollusks are very susceptible to changes in salinity and temperature, and this is so notable an exception that it seems worthy of record. The shells of the animals from the two localities are about the same size and the same series of variations may be seen in each lot.

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EARTHWORMS AND SOIL REACTION

In an interesting experiment on the influence of soil reaction on earthworms Arrhenius[1] shows that, while these animals live and propagate in a soil having a reaction of P_H 6, they cannot live at a P_H of 5. In the course of soil tests on Mt. Desert Island, Maine, with the Wherry method[2] vigorous earthworms were found

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[1] Arrhenius O. "Influence of Soil Reaction on Earthworms." Ecology II: 255–257, 1921. See especially the table on p. 257.

[2] Wherry E. T. "Soil Acidity and a Field Method for Its Measurement." Ecology I: 160–173, 1920.